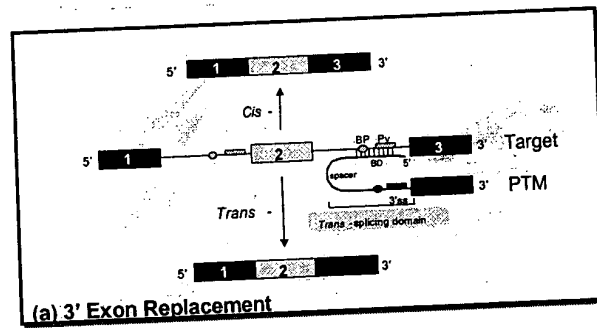
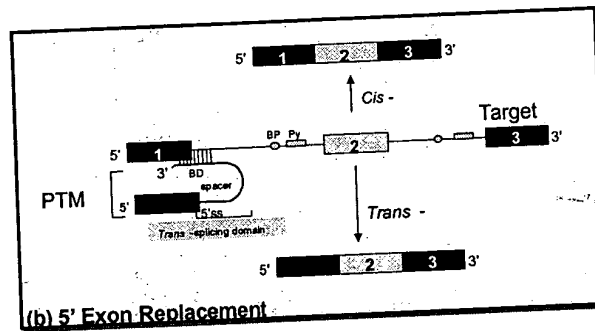


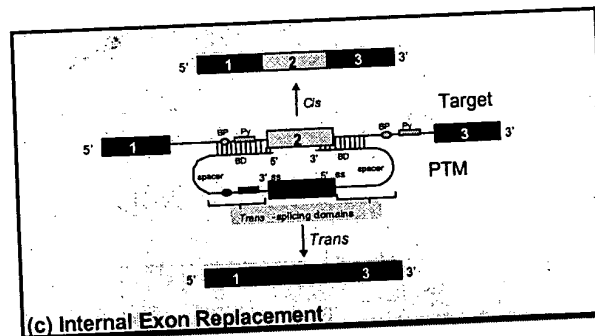
Figure 1A



3' Exon replacement



5' Exon replacement



Internal exon replacement

Figure 1B

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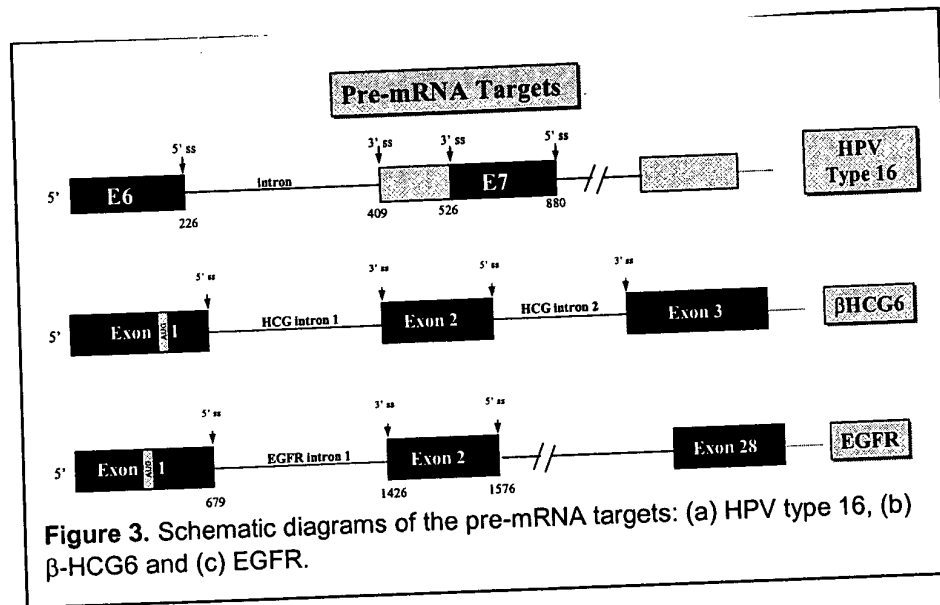


Figure 2

A35003  
(Sheet 4 of 31)

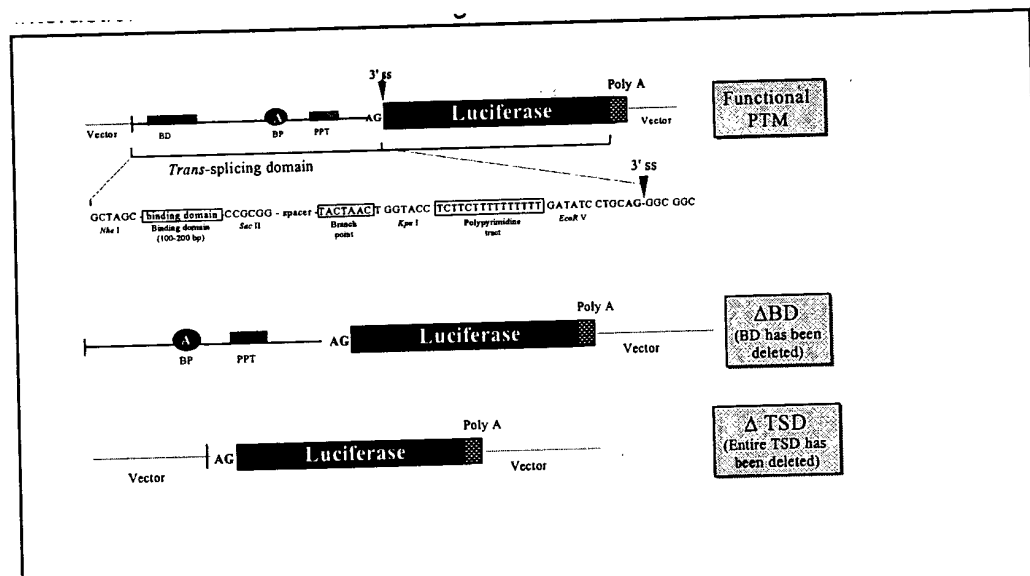


Figure 3

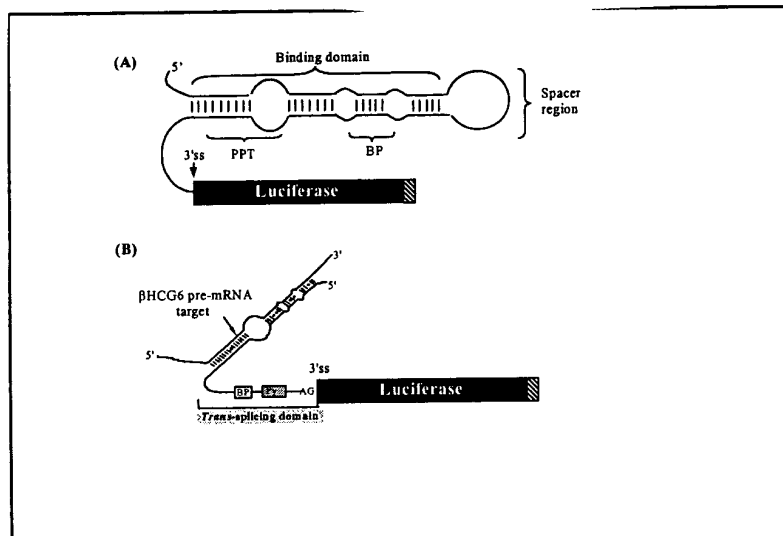


Figure 4

R35003  
(sheet 6 of 31)

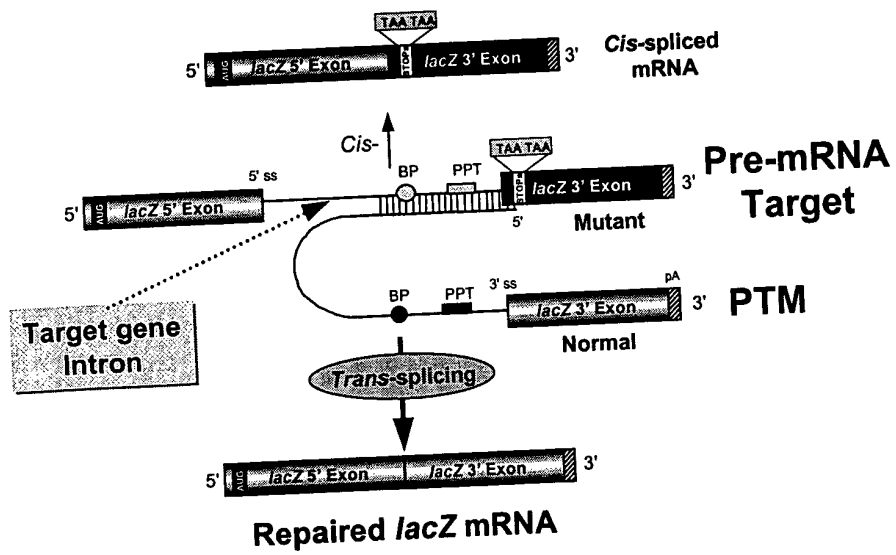
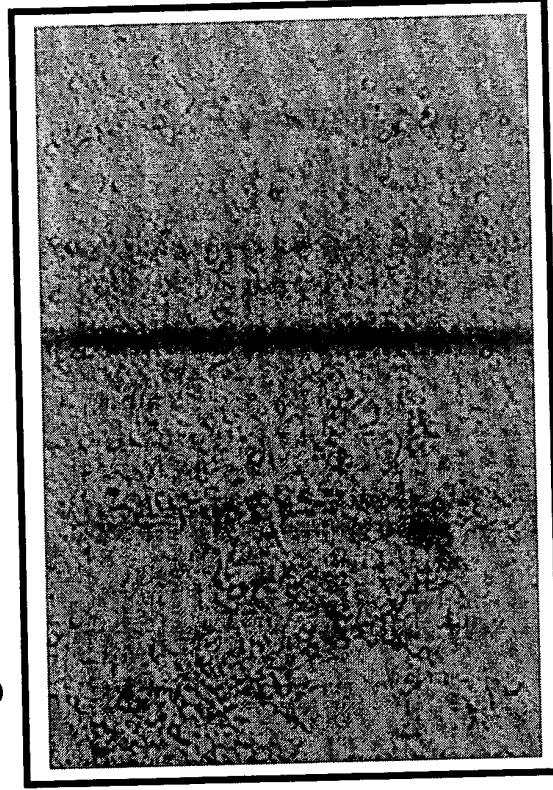


Figure 5A

# Restoration of $\beta$ -Gal Function

*In situ* staining for  $\beta$ -Gal activity following co-transfection  
in 293T cells (unselected)

Target alone



Target + PTM

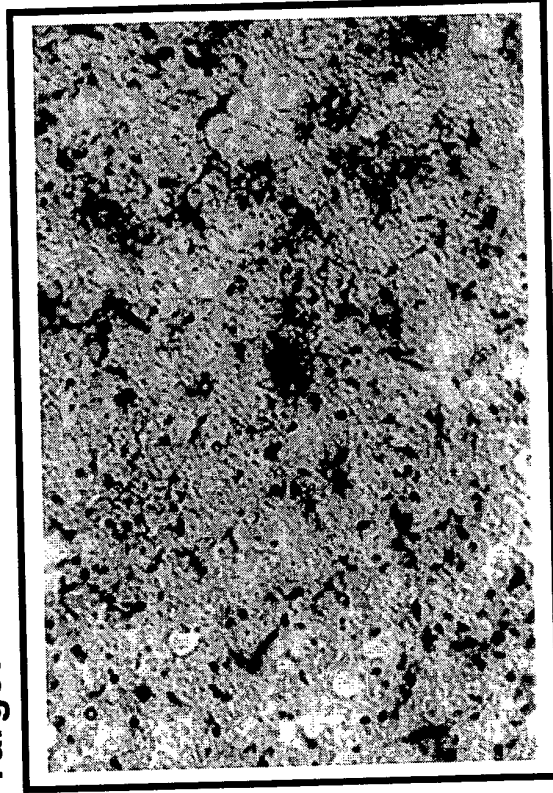


Figure 5B

A35003  
(Sheet 8 of 31)

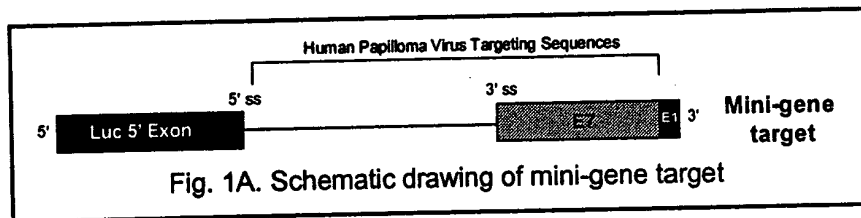


Figure 1b



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(Sheet 9 of 31)

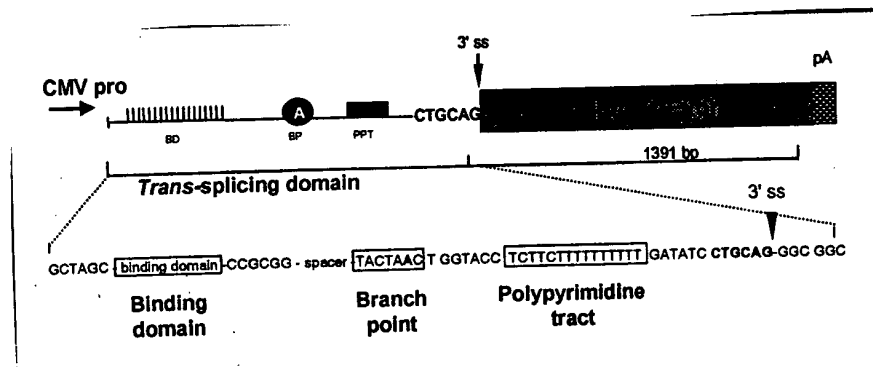


Figure 7

A35003  
(Sheet 10 of 31)

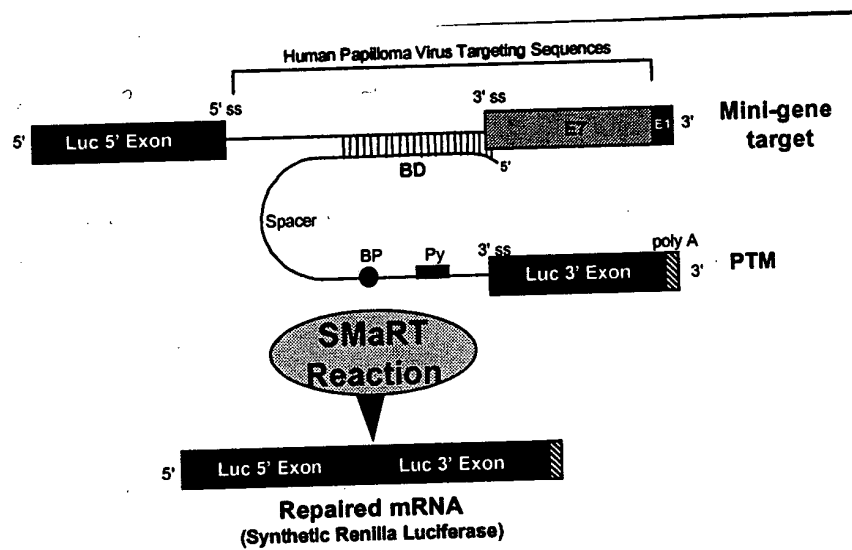


Figure 8

A35003  
(Sheet 11 of 31)

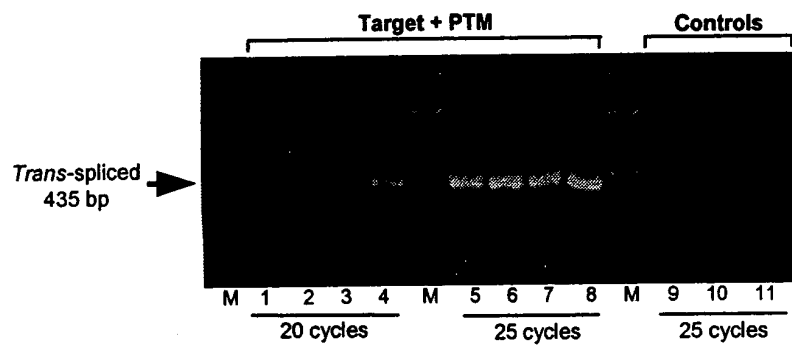


Figure 9

A35003  
(Sheet 12 of 31)

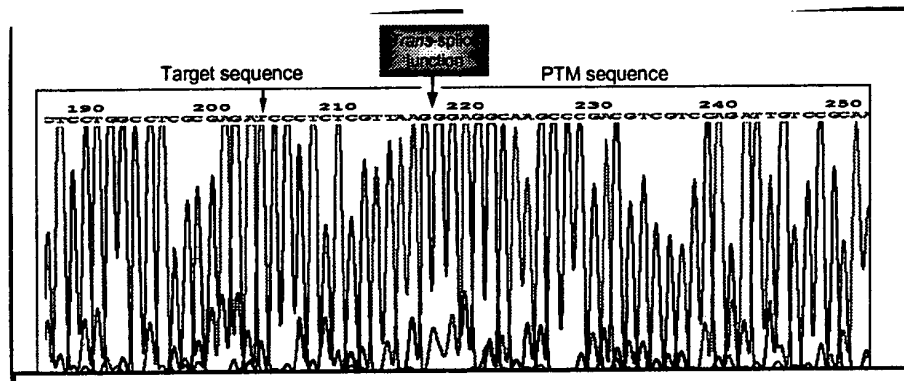


Figure 10

A35003  
(Sheet 13 of 31)

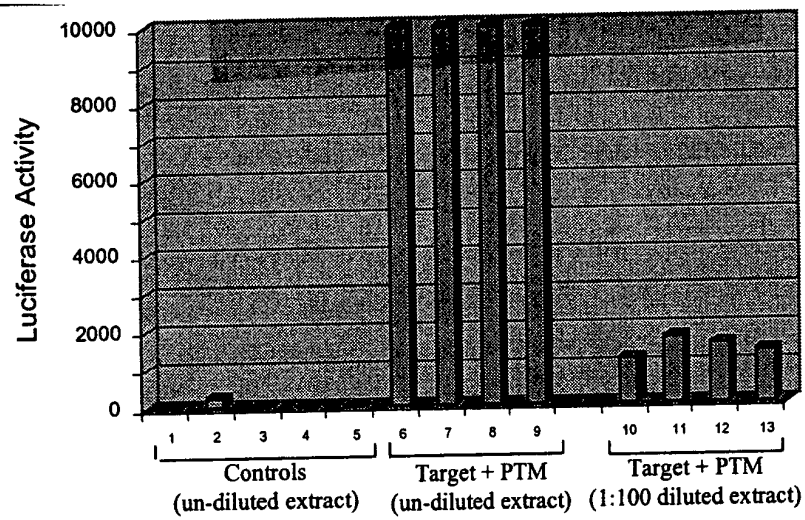


Figure 11

Schematic drawings of Luc-PTM13, Luc-PTM14 and the splice mutant used for the study

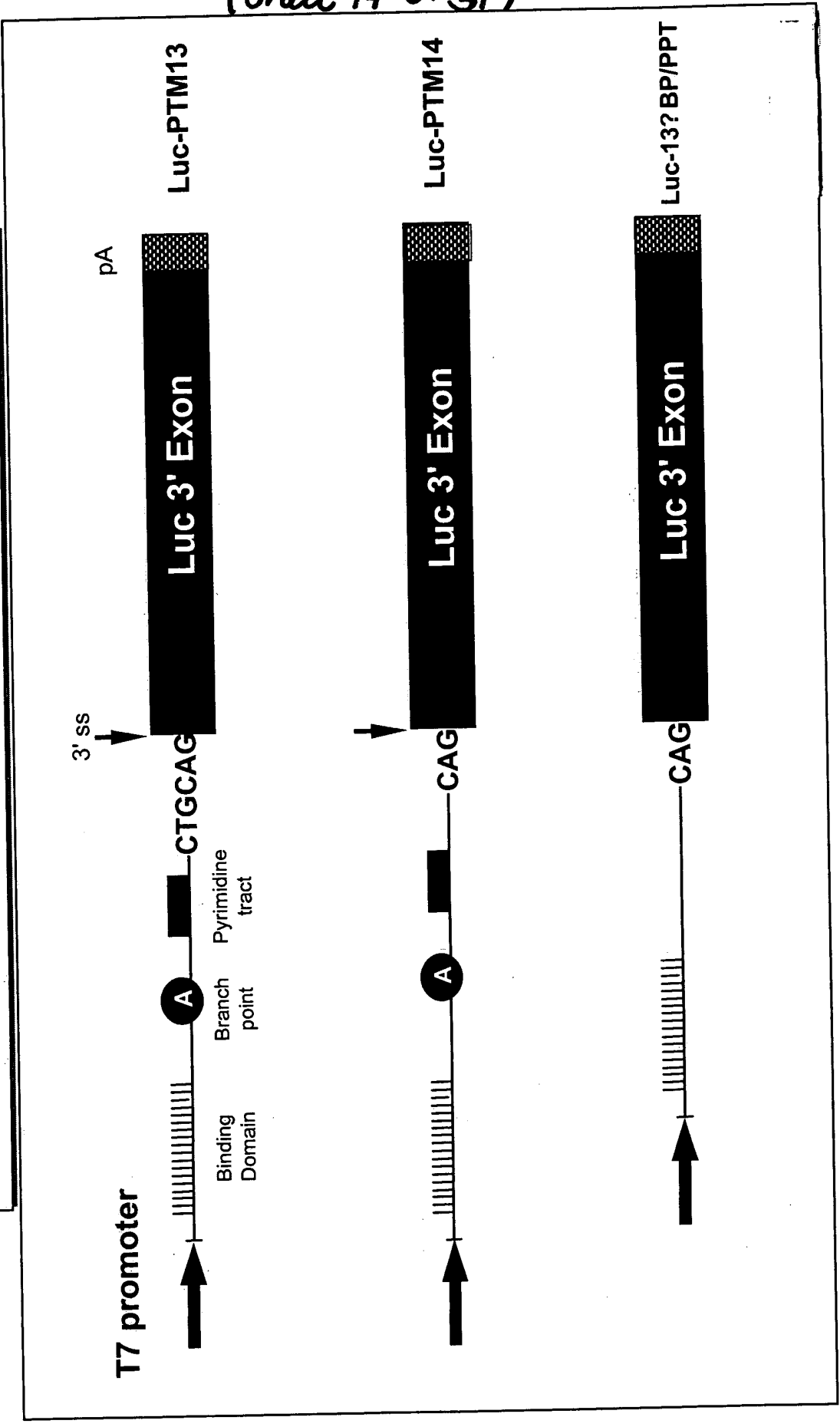


Fig. 12

# Repair of Human Papilloma Virus Target pre-mRNA in HEK 293T Cells (Synthetic PTMs)

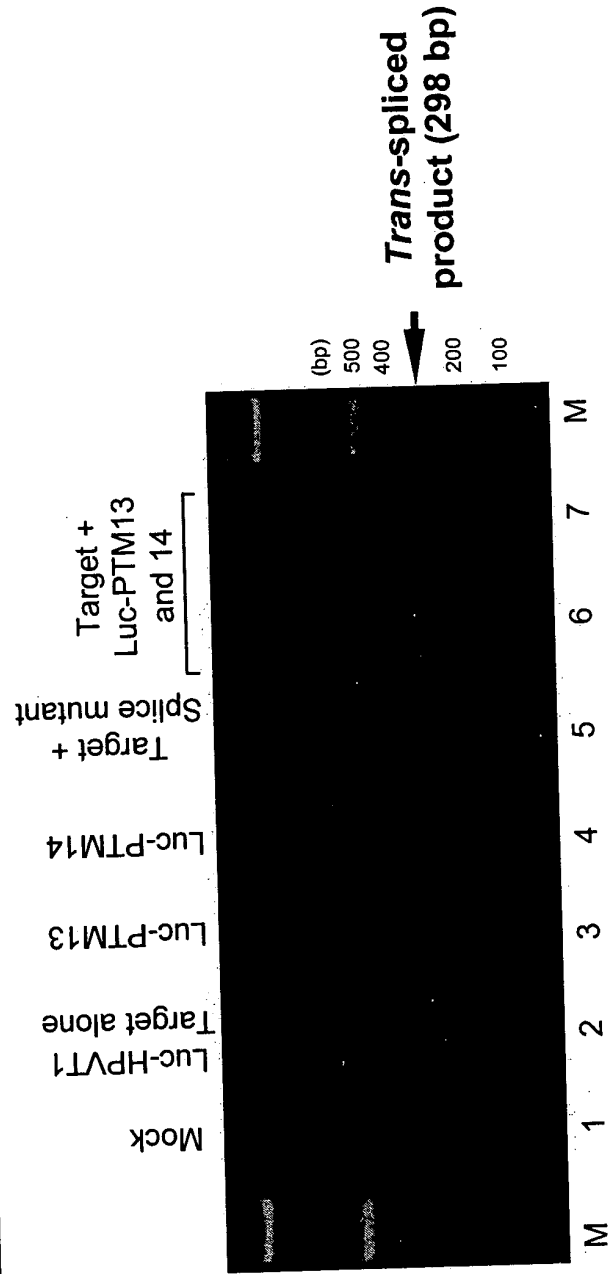
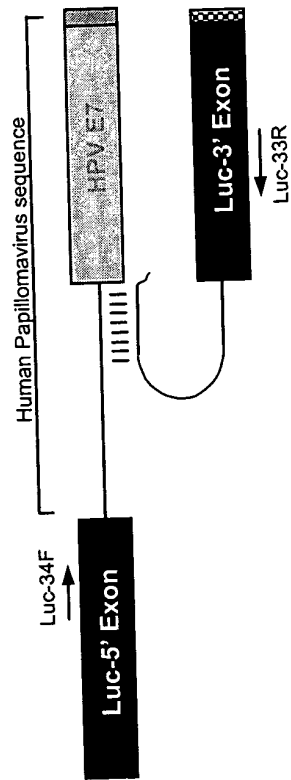


Fig. 13

# Repair of Human Papilloma Virus Target pre-mRNA Restoration of Luciferase Function in HEK 293T Cells (Synthetic PTMs)

## Split Luciferase Model

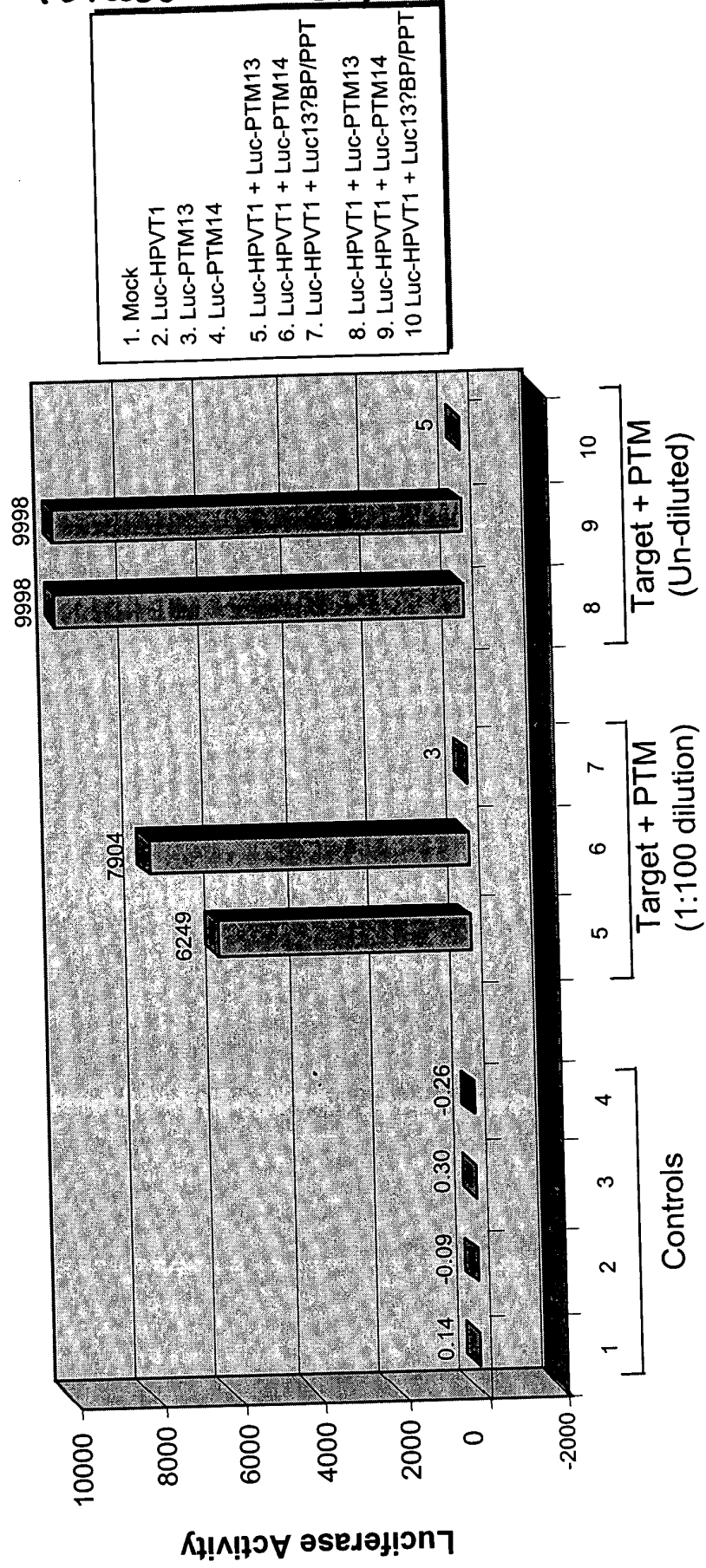


Fig. 14



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# Strategy to Monitor the Expression of Human Papilloma Virus Firefly Luciferase 3' exon replacement

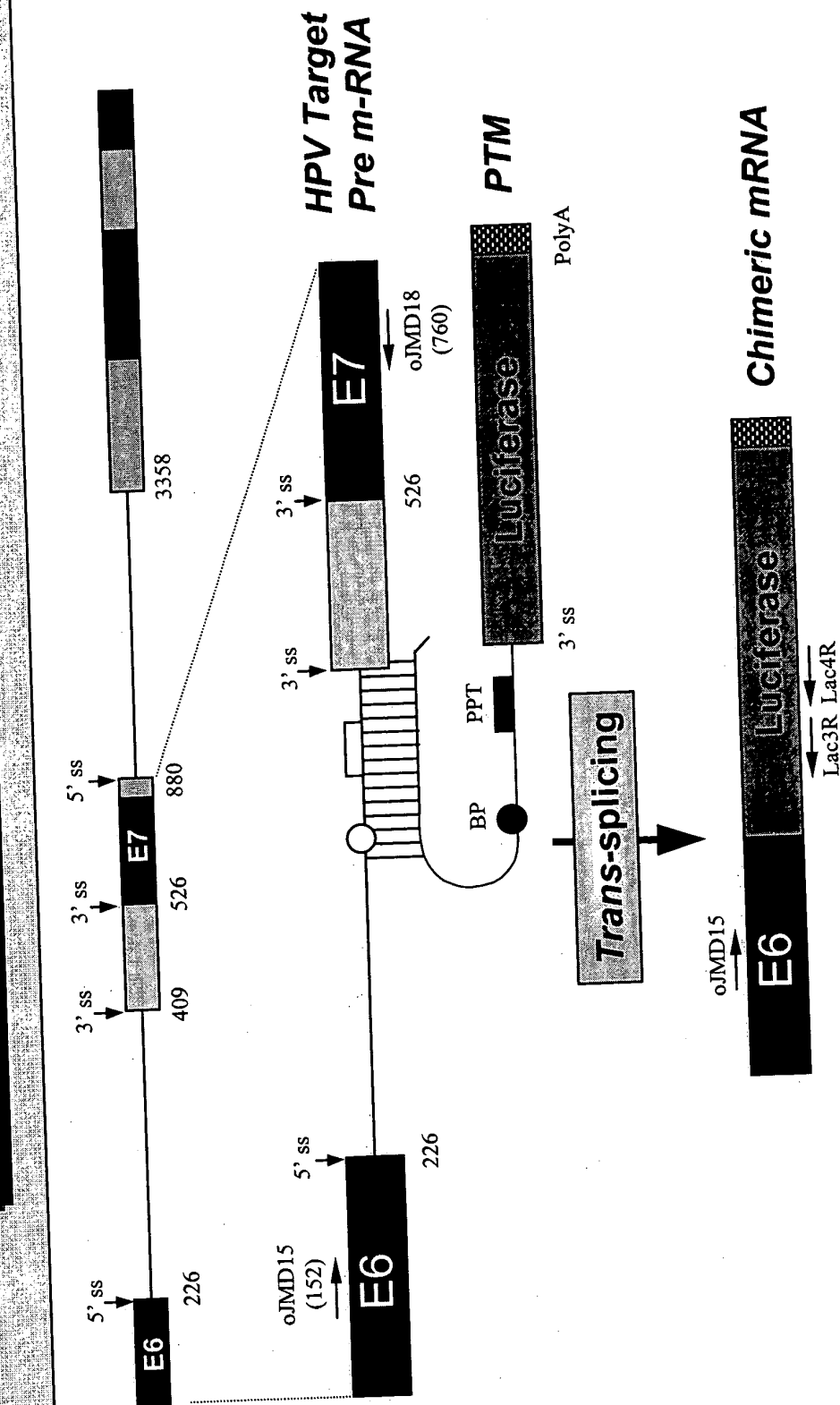


Figure 16

JMD15+Lac4R = 565 bp  
JMD15 + Lac3R = 398 bp

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Luciferase data (with and without target).

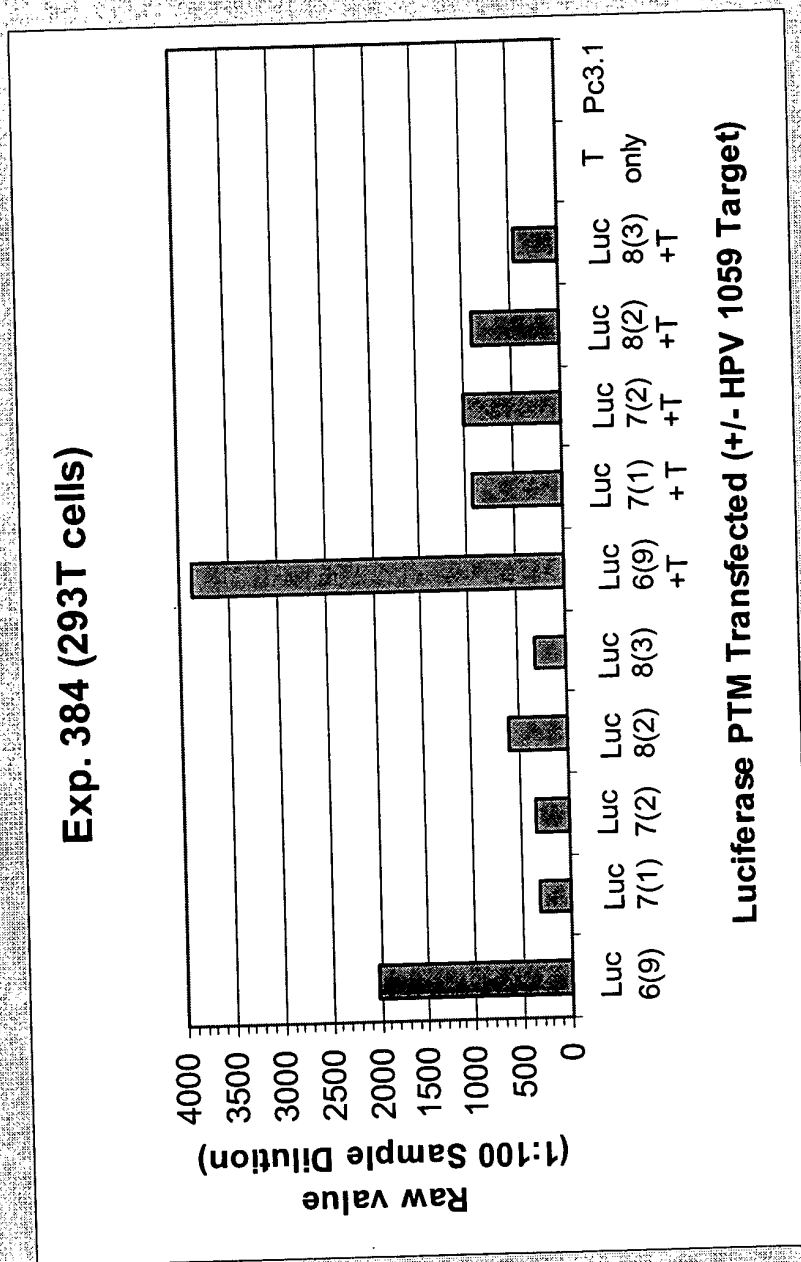


Figure 17

# Schematic of Renilla Luciferase pre-trans-splicing molecule (PTM)

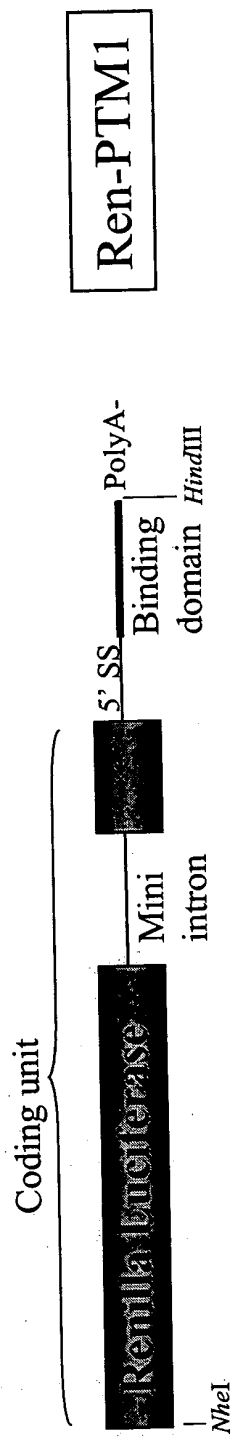
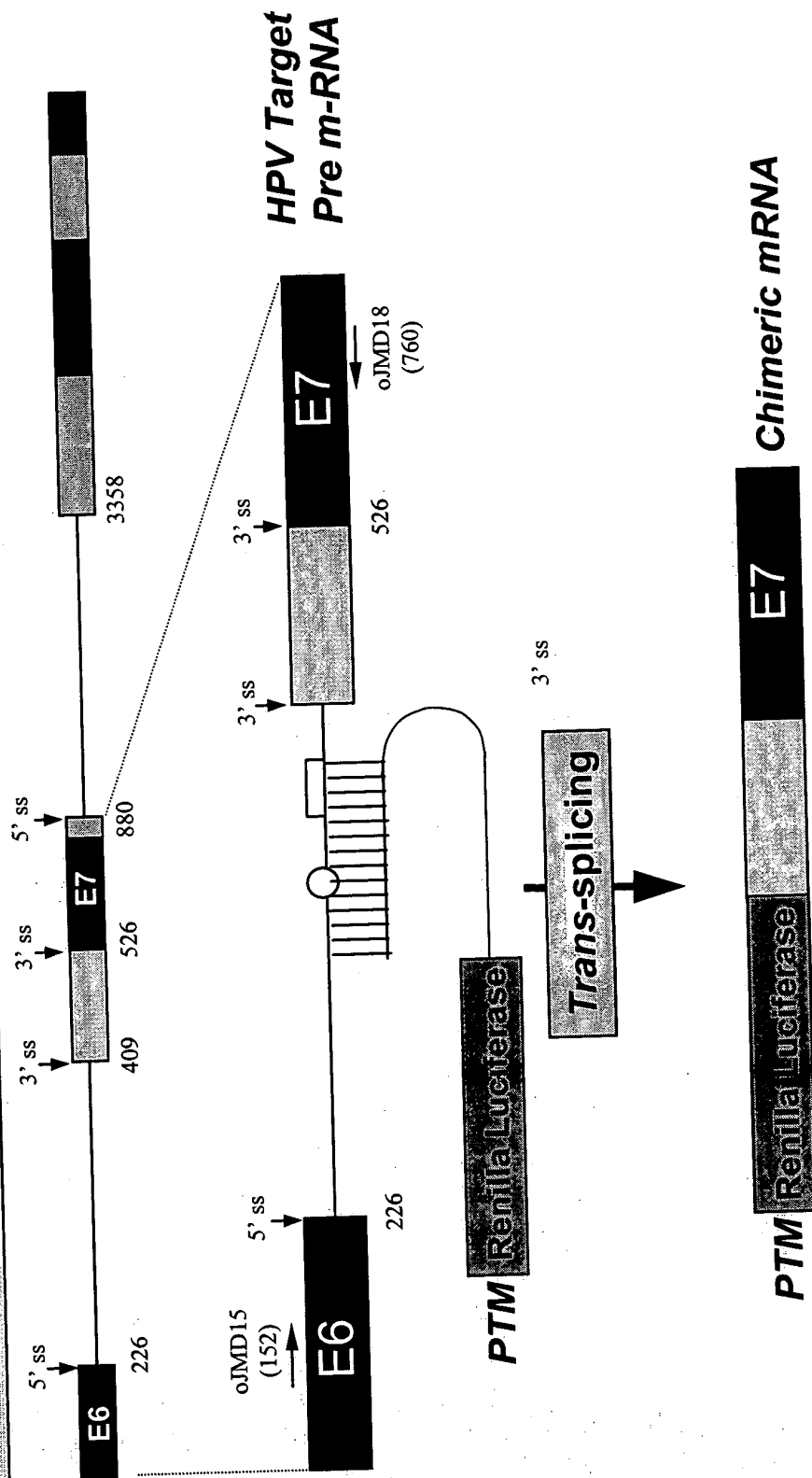


Figure 18

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Figure 19

# SMaRT Strategy to Monitor the Expression of Human Papilloma Virus Renilla 5' exon replacement



## Hemi-reporter Model Targets and PTMs

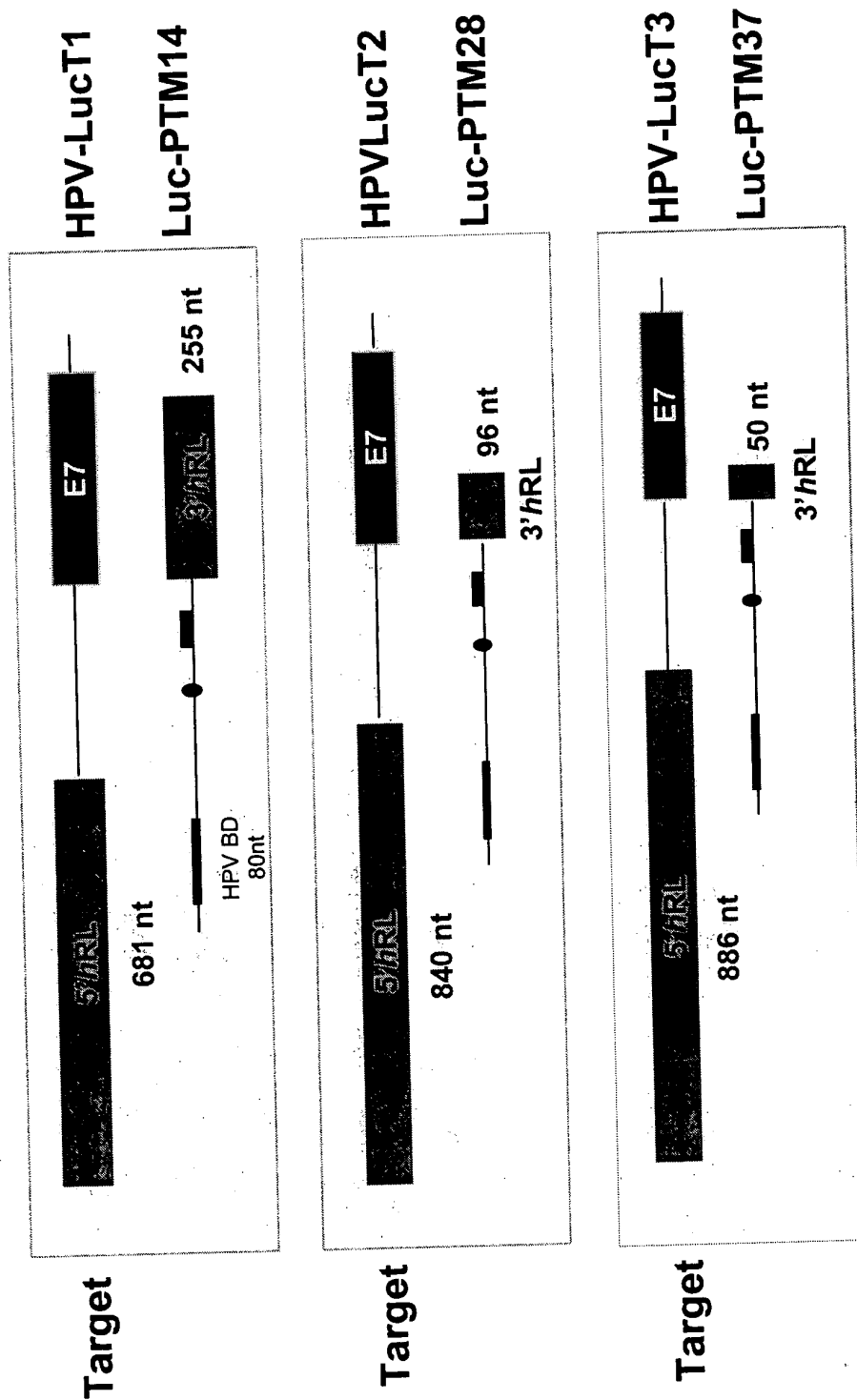
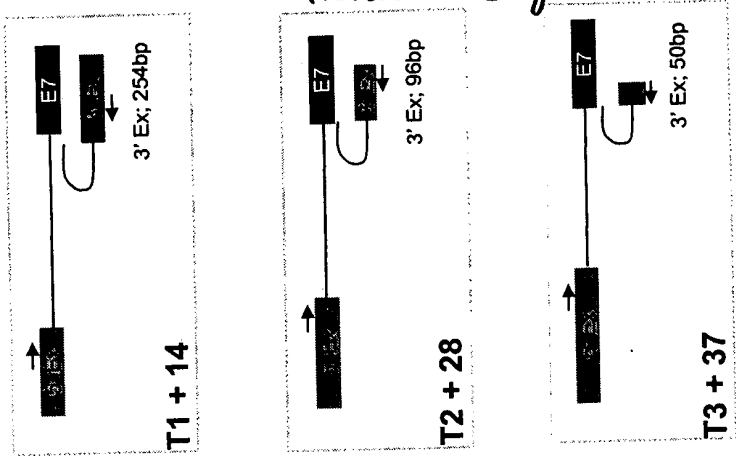
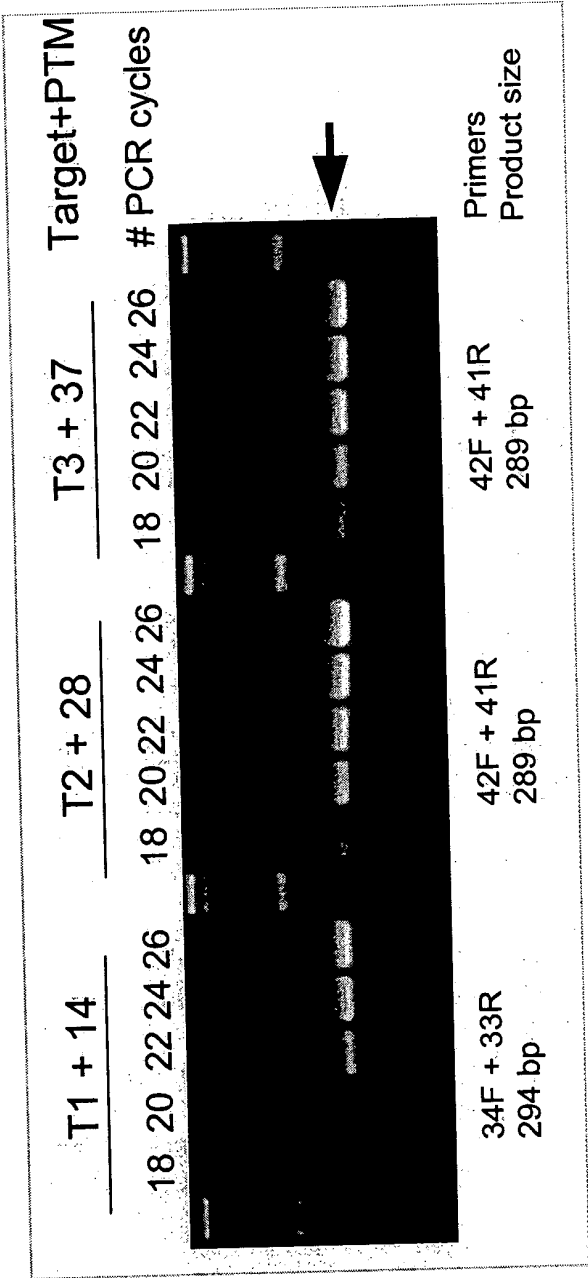


Figure 20

# **Trans-splicing efficiency at the RNA level**

(semi-quantitative RT-PCR)



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INTRONN

Figure 21

**Efficient & accurate *trans*-splicing restores luciferase function in 293T cells**

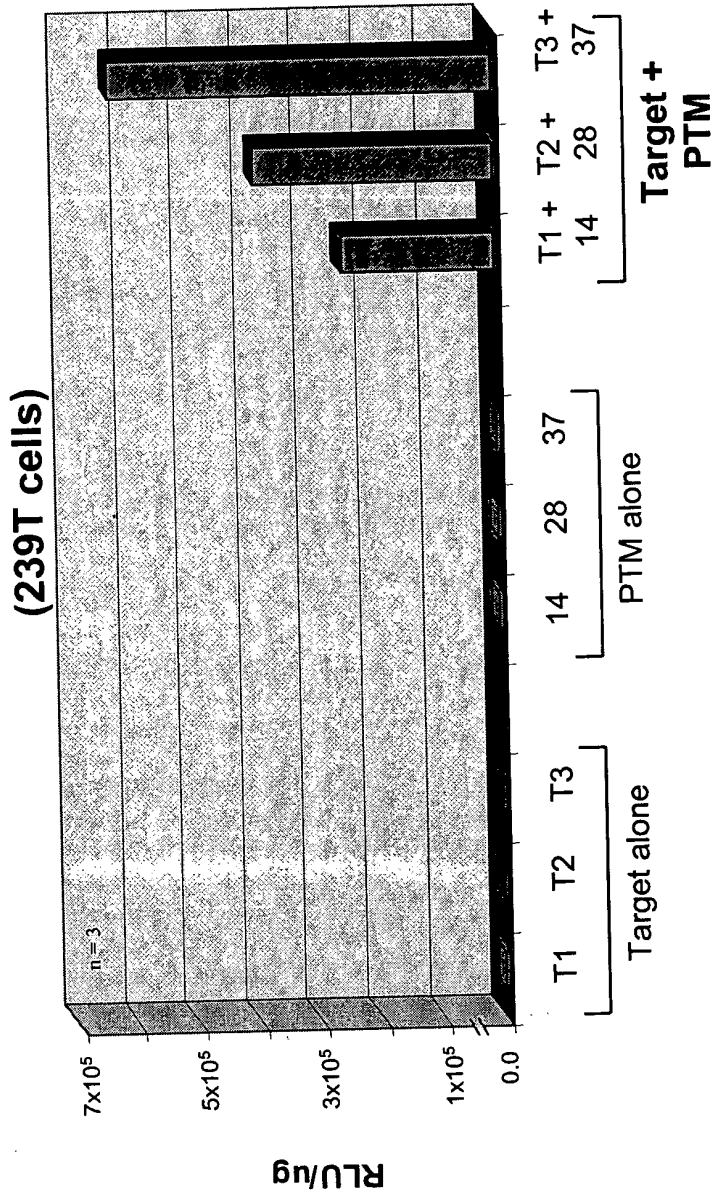


Figure 22



# Imaging of gene expression using full-length reporter PTM

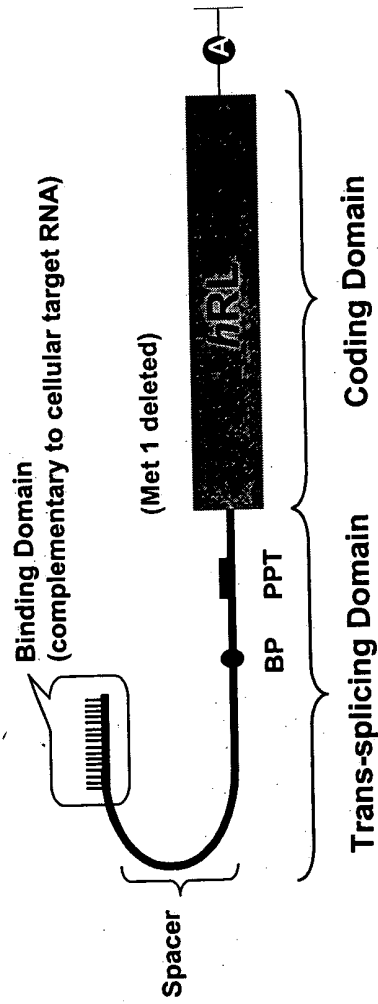


Figure 23A

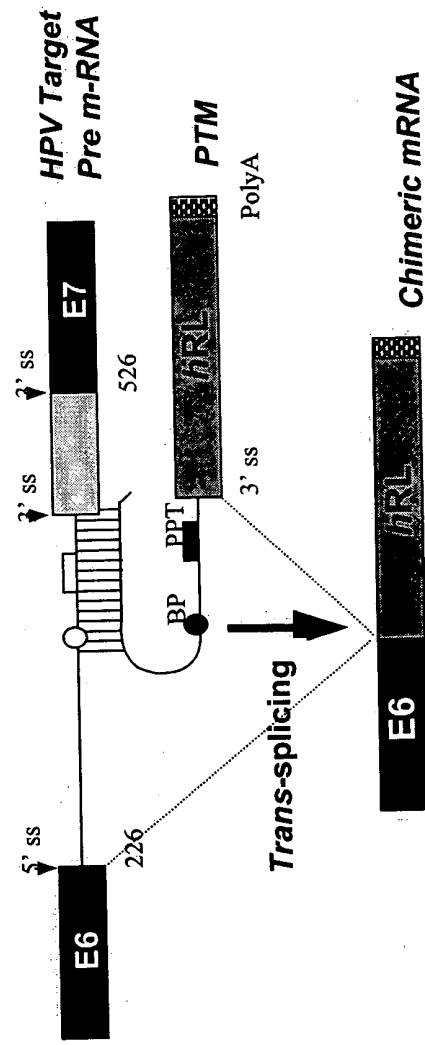


Figure 23B

**Trans-splicing mediated mRNA repair and restoration of *hRenilla Luciferase*  
activity in 293T cells**

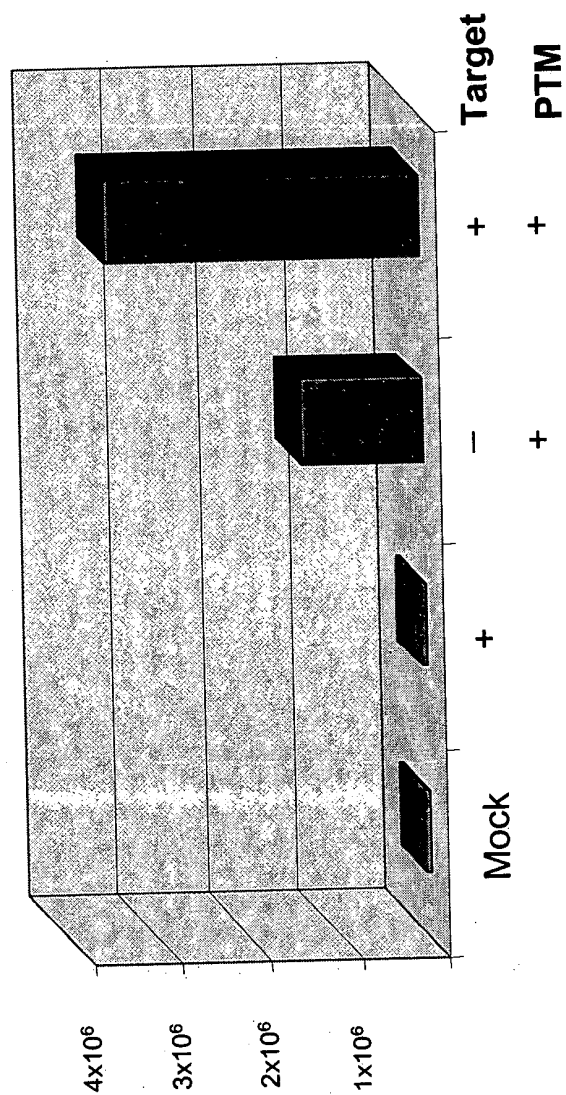
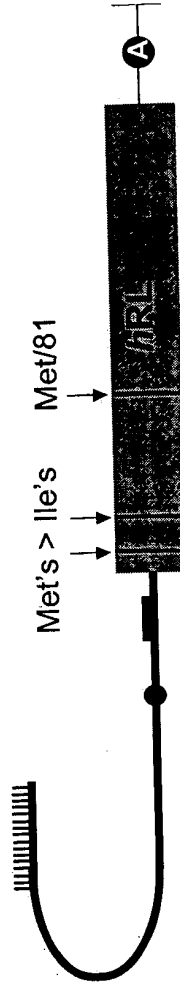


Figure 24



Structure of a full-length imaging PTM (Luc-PTM38)

Figure 25A

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# Luciferase mutant PTM

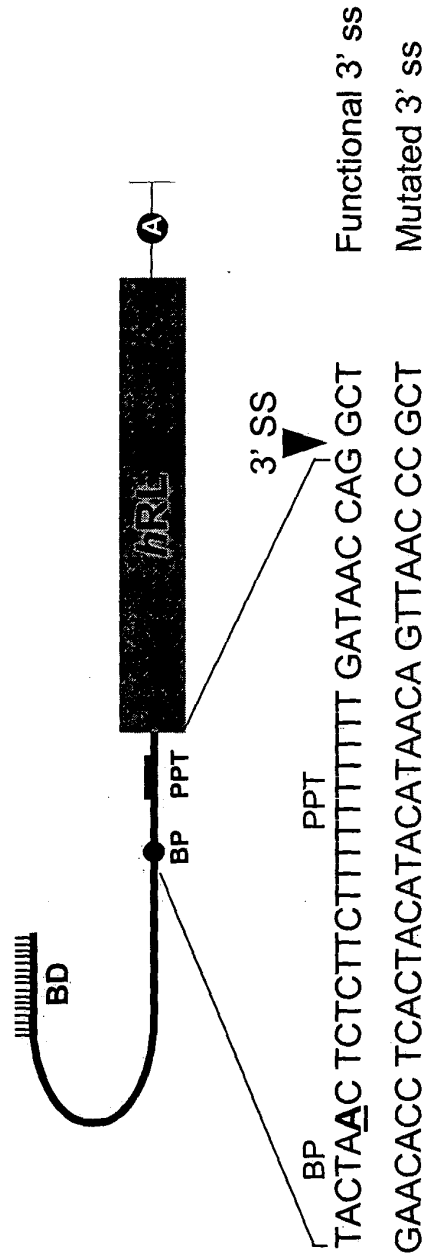


Figure 25B

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## Luciferase Mutant PTMs

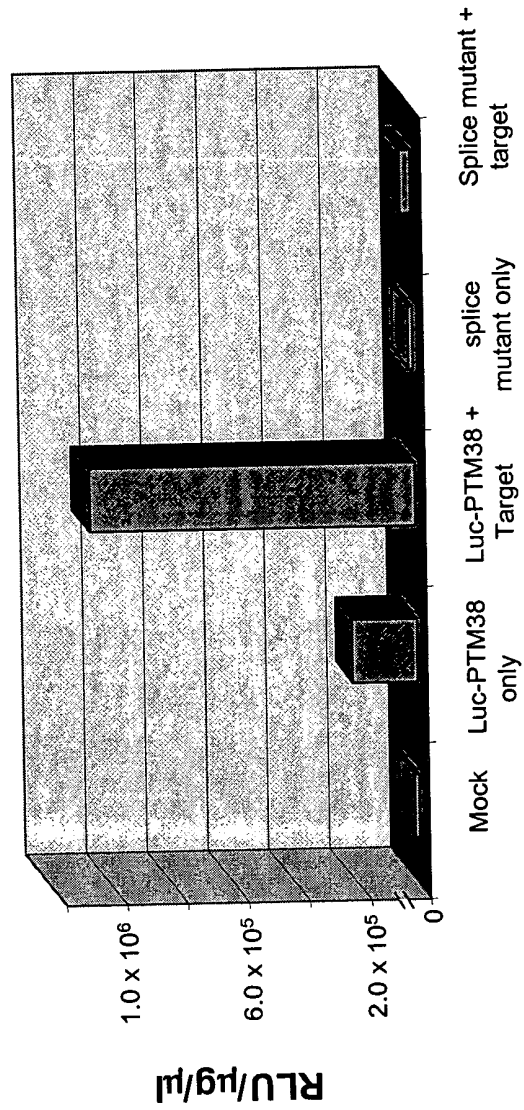
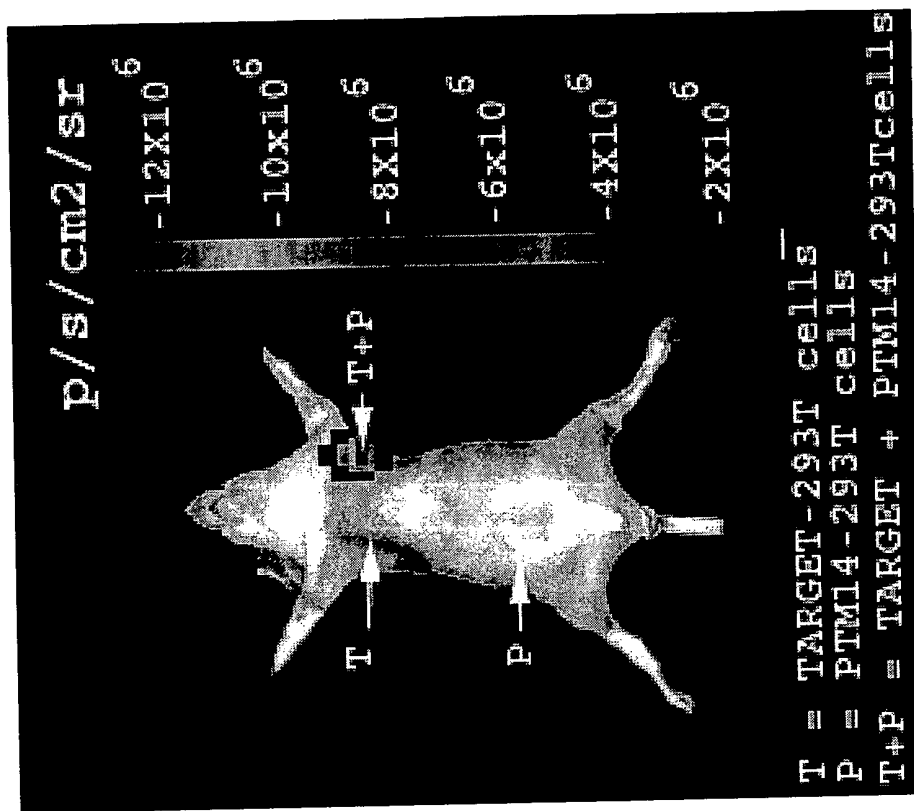


Figure 26

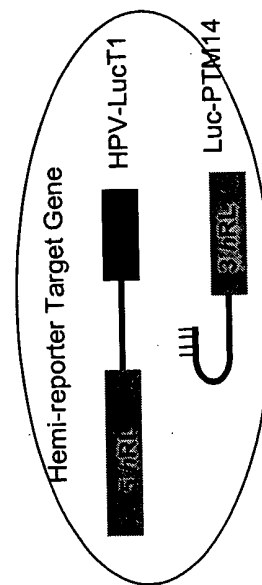
# Imaging Gene Expression (*In vivo*)

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INTRONN

Figure 27



Targ t + PTM used for the above study

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## Imaging Gene Expression In Vivo following IV PTM delivery

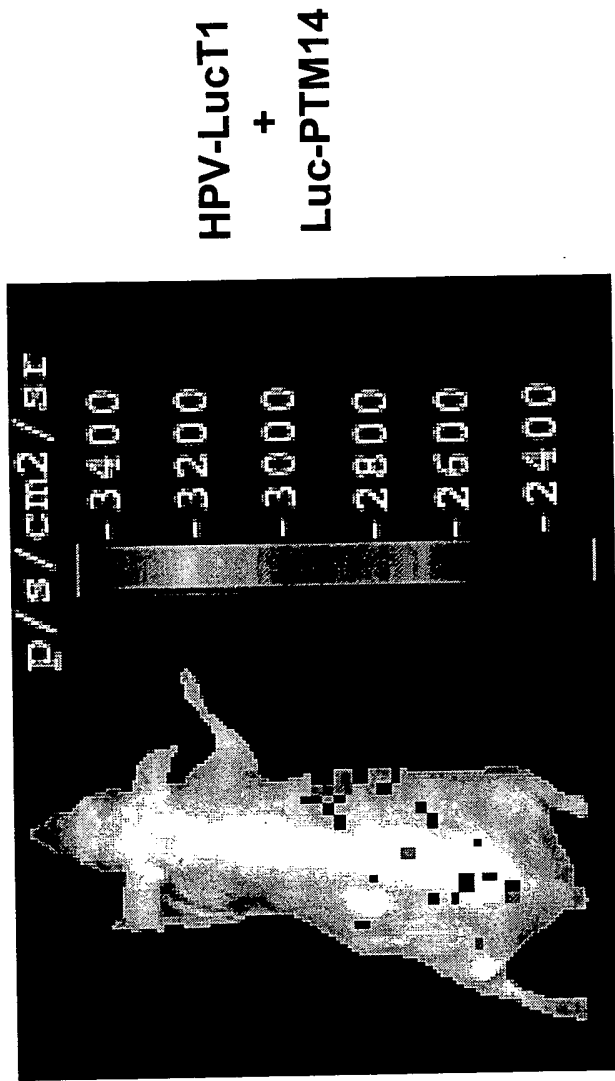


Figure 28